

Application No.: 10/538,407
Amendment under 37 CFR 1.111
Reply to Office Action dated April 2, 2007
August 2, 2007

IN THE CLAIMS

Please substitute the following claims for the pending claims with the same numbers respectively:

Claims 1-2 (Cancelled):

Claim 3 (Original): A process of preparing a substrate for opto-electric or electrical devices which comprises steps of:

(a) preparing a layer A) of bulk mono-crystal nitride containing at least one element of alkali metals (Group I, IUPAC 1989) to have a thickness for substrate by crystallization of gallium or aluminum-containing nitride on a seed from a super-critical ammonia-containing solution; (b) forming a layer B) or C) of nitride by means of vapor phase epitaxy growth on Al or Ga-polar face of the layer A);

and (c) slicing the layer B) or C) off from the substrate A) to get a substrate having a thickness of 100 μm or more and a main surface substantially consisting of Al or Ga-polar face.

Claim 4 (Currently amended): A process of preparing a substrate for opto-electric or electrical devices according to

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claim 3, wherein the step (b) comprises (b1) forming a layer B1) or C1) of nitride by means of vapor phase epitaxy growth on Al or Ga-polar face of the layer A) and (b2) forming a layer B2) or C2) of nitride by means of vapor phase epitaxy growth on the layer B1) or C1);

and (c) slicing the layer B2) or C2) off from the substrate A) to get a substrate having a thickness of 100 μm or more and a main surface substantially consisting of Al or Ga-polar face.

Claim 5 (Currently amended): A process of preparing a substrate for opto-electric or electrical devices according to claim 4, which further comprises (d) forming a layer D) of nitride by means of vapor phase epitaxy growth on Al or Ga-polar face of the layer B), C), B2) or C2).

Claim 6 (Currently amended): A process of preparing a substrate for opto-electric or electrical devices according to claim 4, which further comprises (d) forming a layer D) of nitride by means of vapor phase epitaxy growth on Al or Ga-polar face of the layer B), C), B2) or C2);

and (e) slicing the layer D) off from the substrate B), C), B2) or C2) to get a substrate having a thickness of 100 μm or

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more and a main surface substantially consisting of Al or Ga-polar face.

Claim 7 (Previously presented): A process of preparing a substrate for opto-electric or electrical devices, according to claim 3, wherein the layer B), B1), C) or C1) is prepared by MOCVD and has a thickness of 0.1 to 3 μm .

Claim 8 (Currently amended): A process of preparing a substrate for opto-electric or electrical devices according to claim 7, which ~~comprises~~ further comprises the step of polishing one of the faces of the layer B), B2), C) or C2) to get a substrate for vapor phase epitaxy.

Claim 9 (Currently amended): A process of preparing a substrate for opto-electric or electrical devices according to claim 3, which ~~comprises~~ further comprises the step of annealing the substrate B), B2), C) or C2) in the atmosphere that does not contain hydrogen at temperature between approximately 600 and 1050°C, thus producing material with better crystalline quality than before the annealing.

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Claim 10 (Previously presented): A process of preparing a substrate for opto-electric or electrical devices according to claim 9, wherein the step of annealing is carried out in the atmosphere of inert gas with an addition of oxygen between 10 and 30 vol.%.

Claim 11 (Currently amended): A process of preparing a substrate for opto-electric or electrical devices according to claim 9, wherein the [[the]] step of annealing is carried out in a single step or in multiple steps until the desired level of impurities (such as hydrogen and/or ammonia or ions formed from the impurities formed during the crystallization and/or annealing process) is reached.

Claim 12 (Currently amended): A process of preparing a substrate for opto-electric or electrical devices according to claim 3, which ~~comprises~~ further comprises the step of removing impurities from bulk mono-crystalline nitride by a process of rinsing in the environment of supercritical ammonia-containing solvent, water or carbon dioxide or being subjected to the action of gaseous hydrogen, nitrogen or ammonia.

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Claim 13 (Original): A process of preparing a substrate for opto-electric or electrical devices according to claim 12, wherein the step of rinsing is carried out with aid of the application of ultrasounds or the exposure to an electron beam.

Claims 22-23 (Cancelled):

Please add new claims 24-26 as follows.

Claim 24 (New): A process of preparing a substrate for opto-electric or electrical devices according to claim 3, wherein the bulk mono-crystal nitride has a negative temperature coefficient solubility.

Claim 25 (New): A process of preparing a substrate for opto-electric or electrical devices according to claim 3, wherein the step of preparing a layer (A) further comprises a step of simultaneous creation of at least two zones with different temperatures in an autoclave.

Claim 26 (New): A process of preparing a substrate for opto-electric or electrical devices according to claim 3, wherein

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the bulk mono-crystal nitride has a half width of the X-ray rocking curve for the (0002) plane below 60 arcsec (for Cu K α 1).